FIG. 1

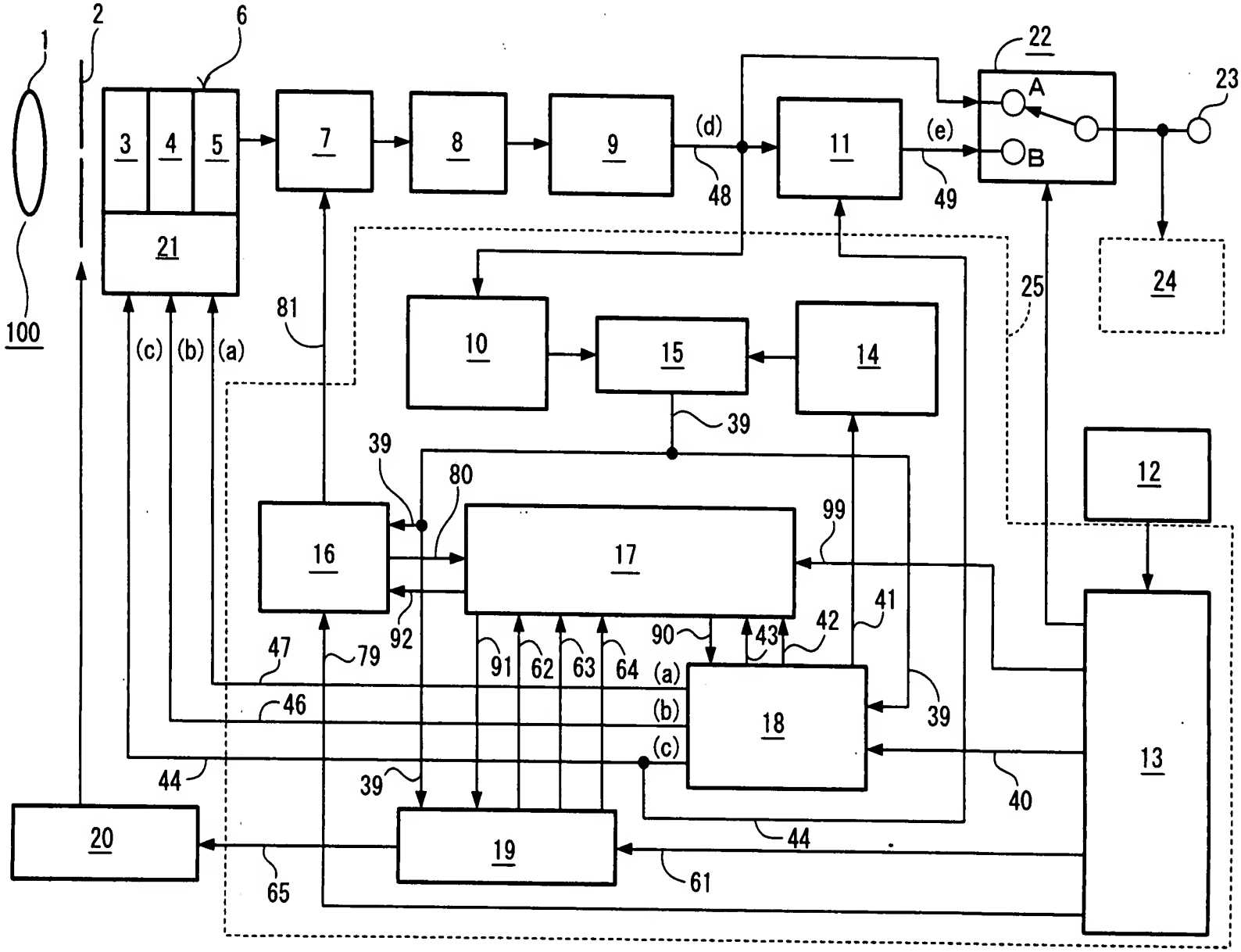

1
2
6
22
23
A
B
3
4
5
7
8
9
(d)
11
(e)
48
49
21
24
25
100
81
(c)
(b)
(a)
10
15
14
39
12
80
99
16
17
41
92
90
43
42
47
79
91
62
63
64
(a)
46
(b)
18
(c)
13
44
40
20
19
65
61

FIG. 2

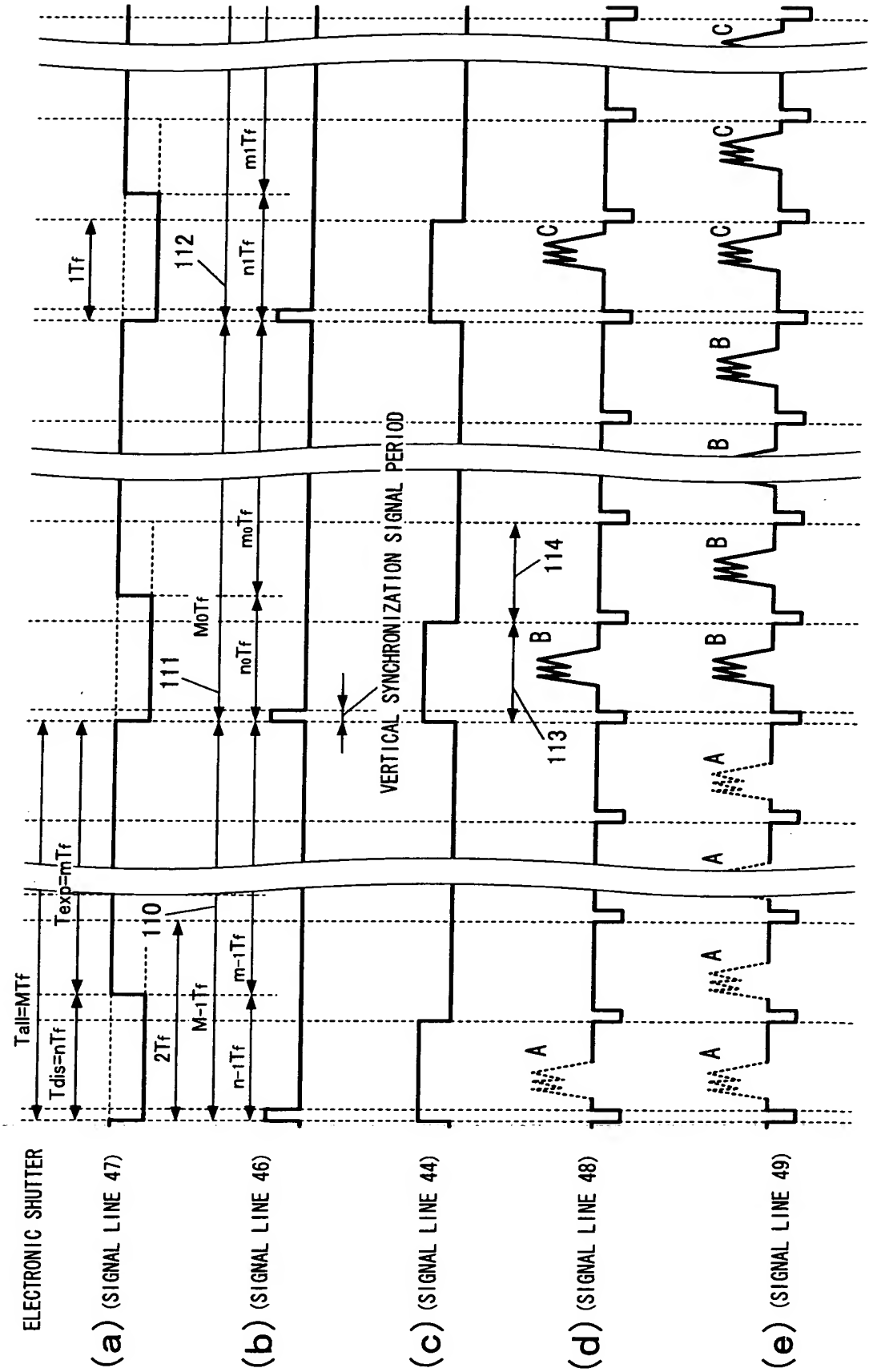

ELECTRONIC SHUTTER
(a) (SIGNAL LINE 47)
(b) (SIGNAL LINE 46)
(c) (SIGNAL LINE 44)
(d) (SIGNAL LINE 48)
(e) (SIGNAL LINE 49)
Tall=MTf
Tdis=nTf
Texp=mTf
1Tf
2Tf
M-1Tf
n-1Tf
m-1Tf
110
111
112
113
114
MoTf
noTf
moTf
n1Tf
m1Tf
VERTICAL SYNCHRONIZATION SIGNAL PERIOD
A
B
C

FIG. 3

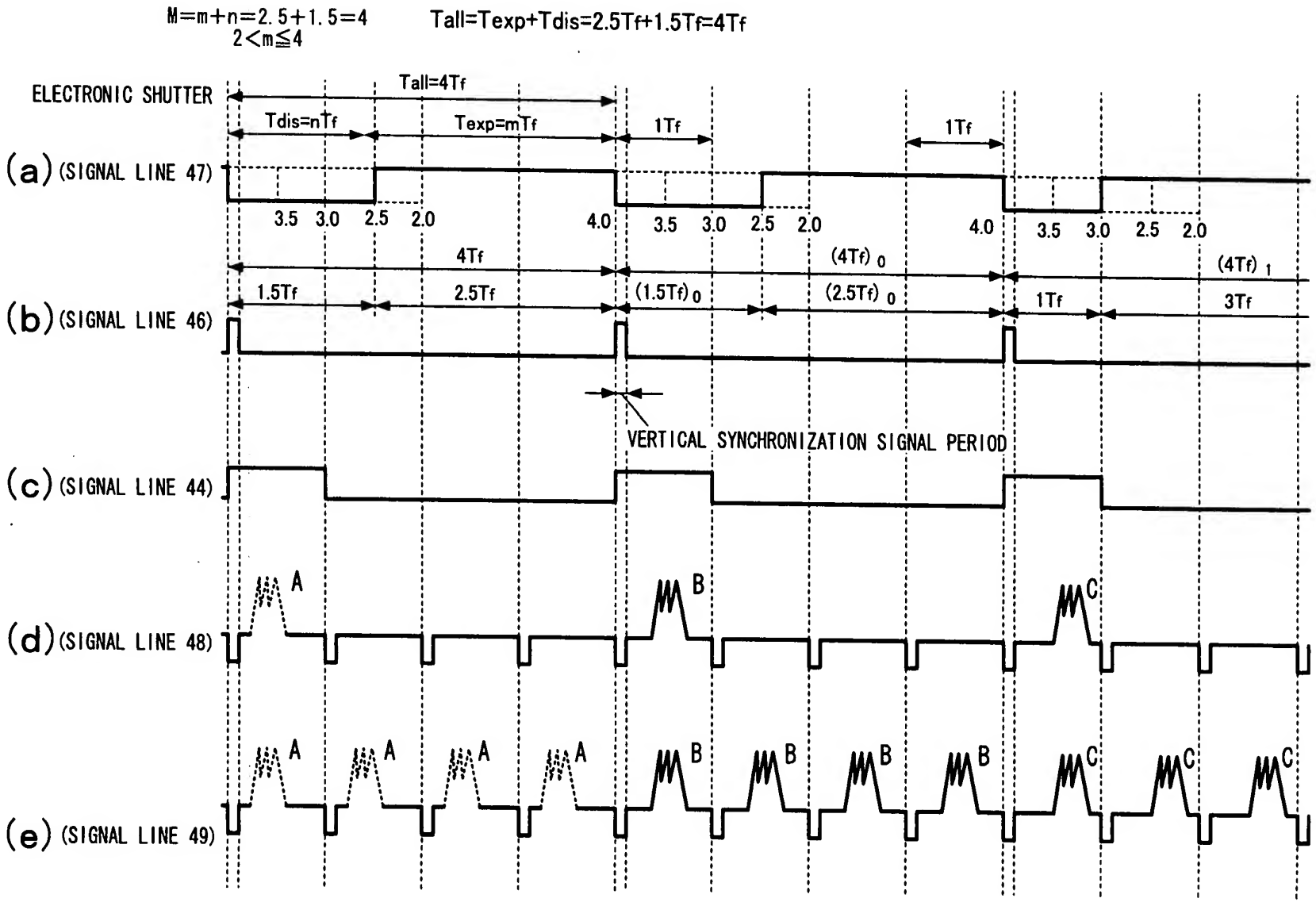

M=m+n=2.5+1.5=4
2<m≦4
Tall=Texp+Tdis=2.5Tf+1.5Tf=4Tf
ELECTRONIC SHUTTER
Tall=4Tf
Tdis=nTf
Texp=mTf
1Tf
1Tf
(a) (SIGNAL LINE 47)
3.5 3.0 2.5 2.0
4.0
3.5 3.0 2.5 2.0
4.0
3.5 3.0 2.5 2.0
4Tf
(4Tf) 0
(4Tf) 1
(b) (SIGNAL LINE 46)
1.5Tf
2.5Tf
(1.5Tf) 0
(2.5Tf) 0
1Tf
3Tf
VERTICAL SYNCHRONIZATION SIGNAL PERIOD
(c) (SIGNAL LINE 44)
(d) (SIGNAL LINE 48)
A
B
C
(e) (SIGNAL LINE 49)
A A A A
B B B B
C C C

FIG. 4

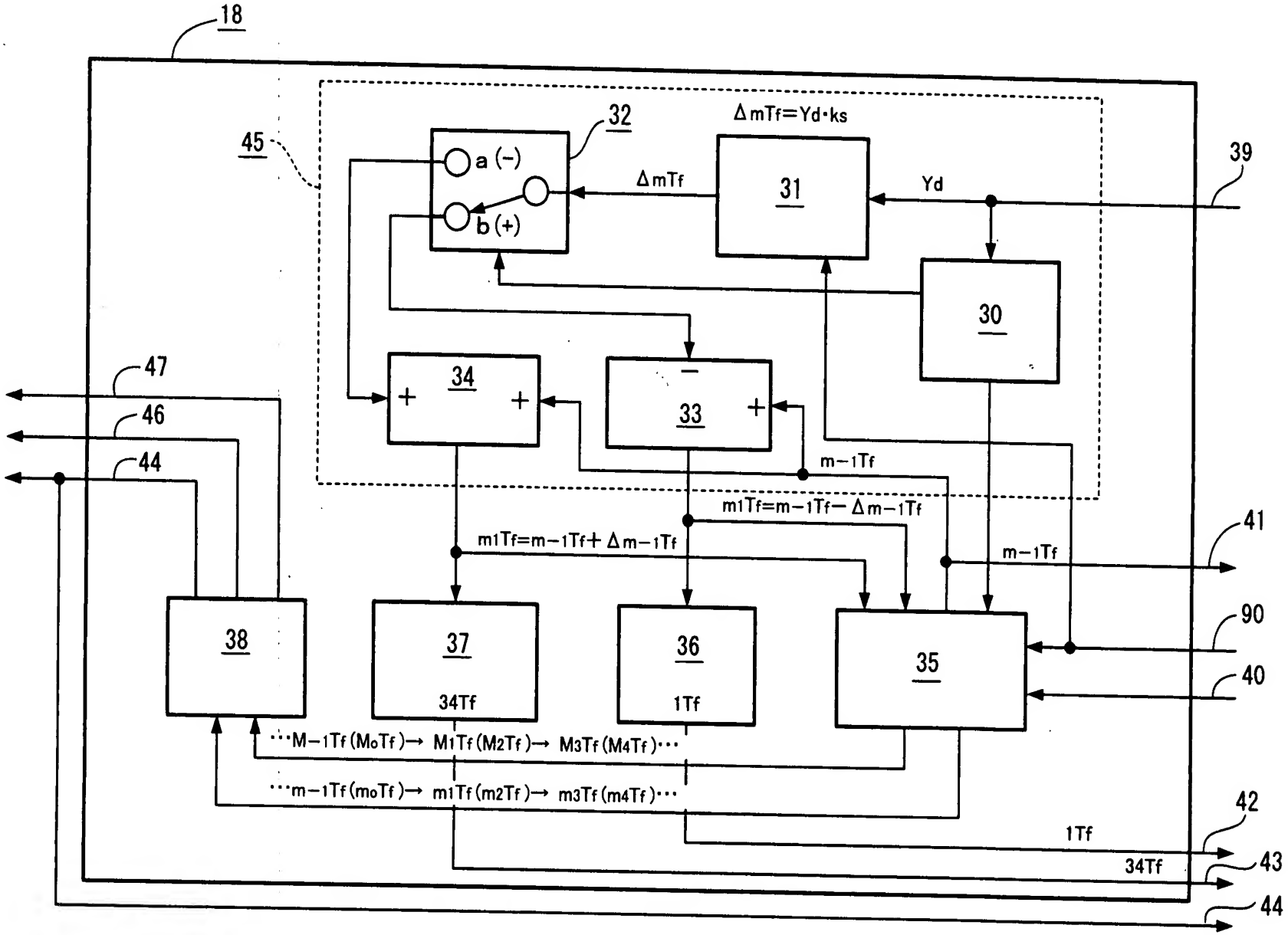

18
45
32
ΔmTf=Yd·ks
a (−)
b (+)
ΔmTf
31
Yd
39
30
34
33
47
46
44
m−1Tf
m1Tf=m−1Tf− Δm−1Tf
m1Tf=m−1Tf+ Δm−1Tf
41
m−1Tf
38
37
34Tf
36
1Tf
35
90
40
···M−1Tf (MoTf)→ M1Tf (M2Tf)→ M3Tf (M4Tf)···
···m−1Tf (moTf)→ m1Tf (m2Tf)→ m3Tf (m4Tf)···
42
1Tf
34Tf
43
44

FIG. 5

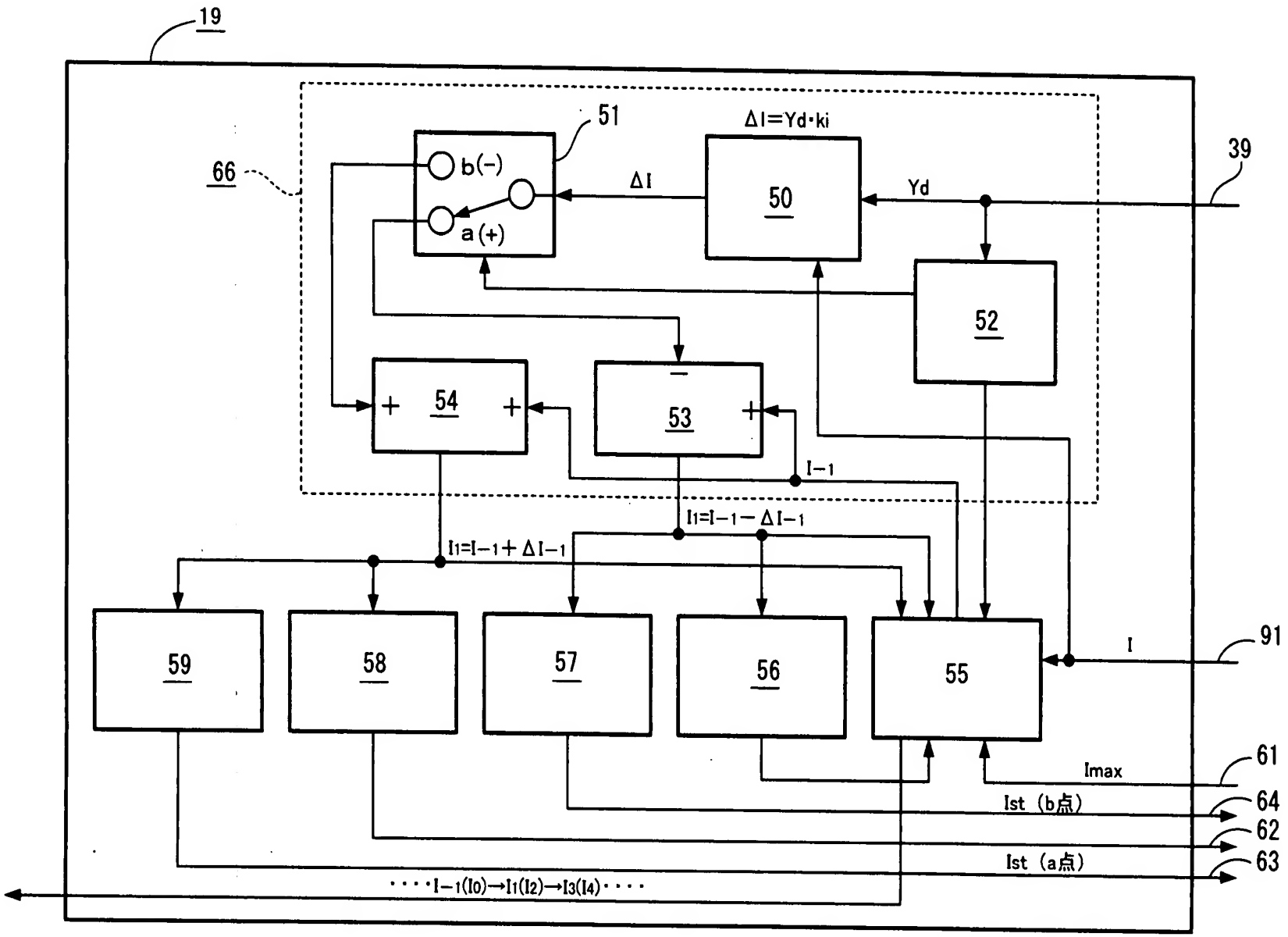

19
51
ΔI=Yd·ki
66
b(−)
a(+)
ΔI
50
Yd
39
52
54
53
I−1
I1=I−1−ΔI−1
I1=I−1+ΔI−1
59
58
57
56
55
I
91
Imax
61
Ist（b点）
64
62
Ist（a点）
63
・・・・I−1(I0)→I1(I2)→I3(I4)・・・・

FIG. 6

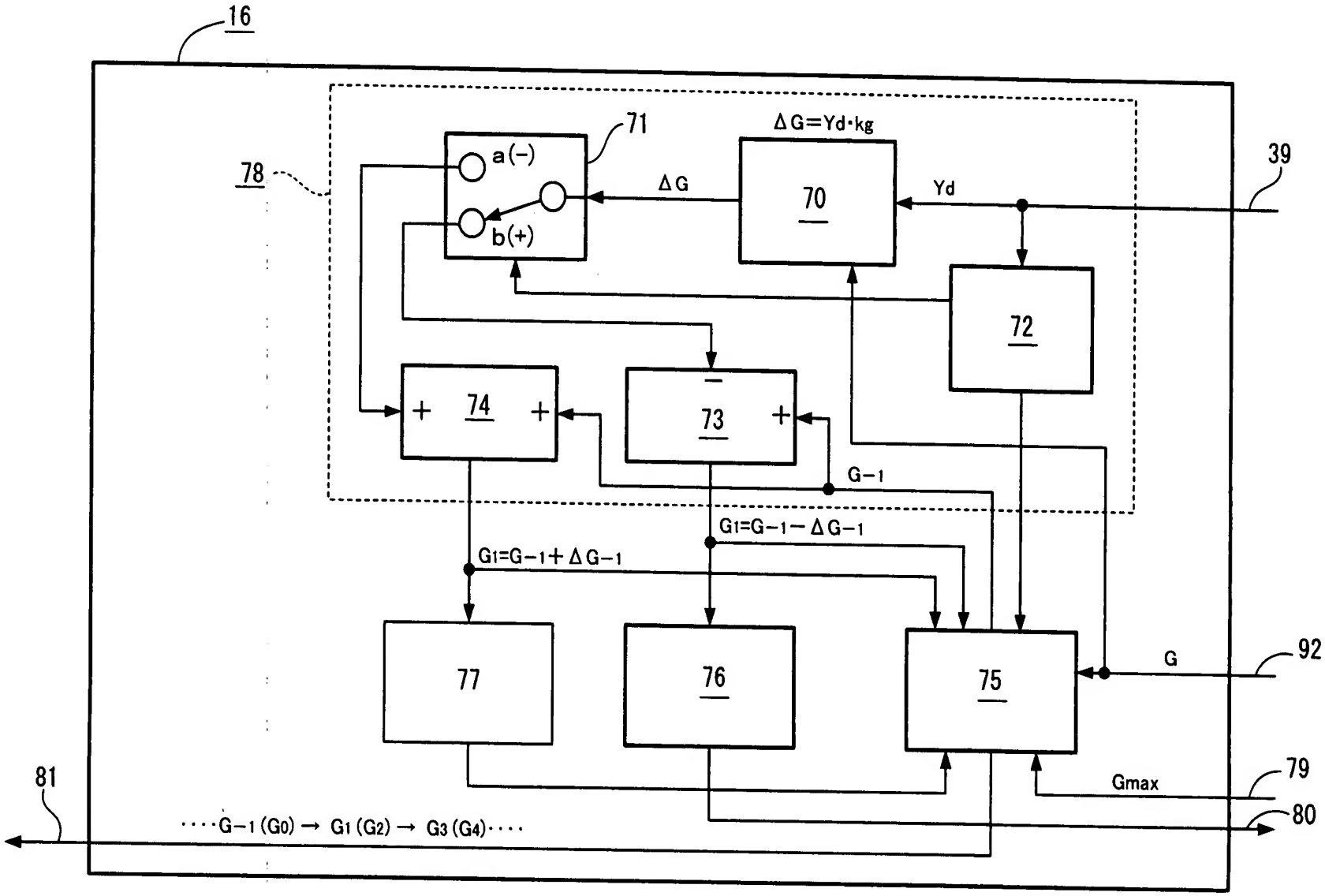

16
78
71
a(−)
b(+)
ΔG=Yd·kg
ΔG
70
Yd
39
72
74
73
G−1
G1=G−1−ΔG−1
G1=G−1+ΔG−1
77
76
75
G
92
Gmax
79
80
81
····G−1 (G0) → G1 (G2) → G3 (G4)····

FIG. 7

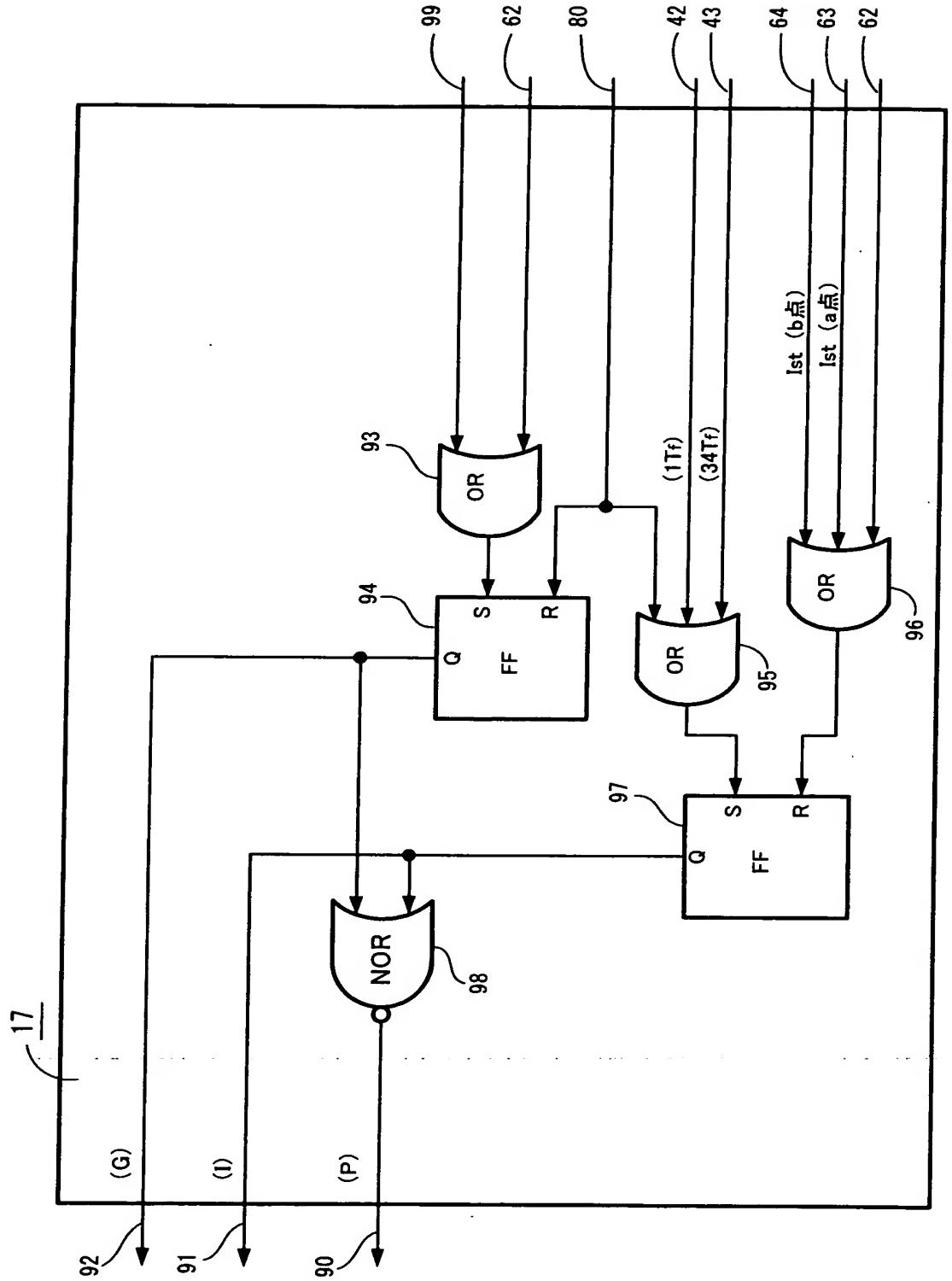

99
62
80
42
43
64
63
62
1st (b点)
1st (a点)
(1Tf)
(34Tf)
93
OR
94
S
R
Q
FF
OR
95
OR
96
97
S
R
Q
FF
NOR
98
17
(G)
(I)
(P)
92
91
90

FIG.8

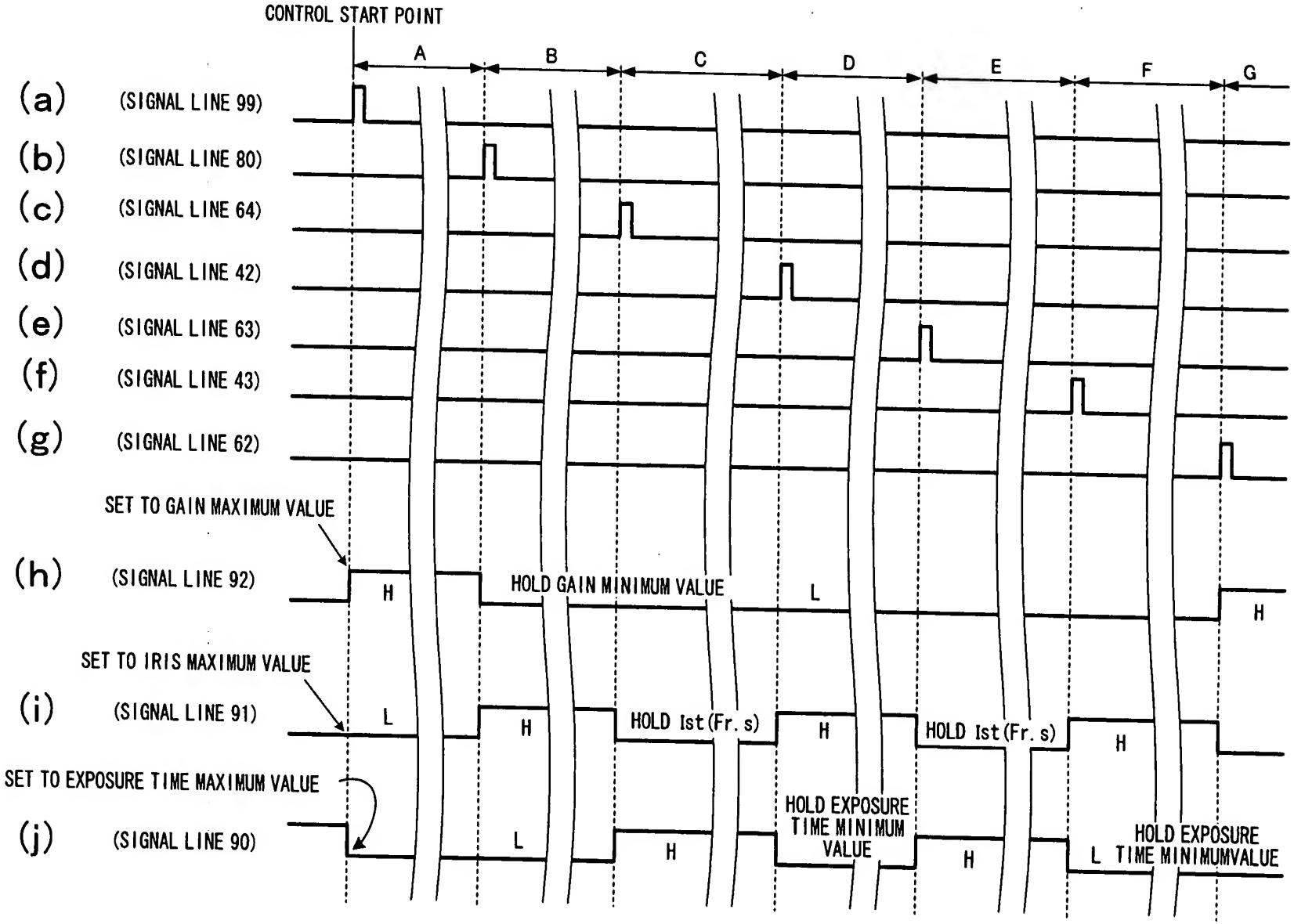

CONTROL START POINT
A
B
C
D
E
F
G
(a) (SIGNAL LINE 99)
(b) (SIGNAL LINE 80)
(c) (SIGNAL LINE 64)
(d) (SIGNAL LINE 42)
(e) (SIGNAL LINE 63)
(f) (SIGNAL LINE 43)
(g) (SIGNAL LINE 62)
SET TO GAIN MAXIMUM VALUE
(h) (SIGNAL LINE 92)
H
HOLD GAIN MINIMUM VALUE
L
H
SET TO IRIS MAXIMUM VALUE
(i) (SIGNAL LINE 91)
L
H
HOLD 1st(Fr.s)
H
HOLD 1st(Fr.s)
H
SET TO EXPOSURE TIME MAXIMUM VALUE
(j) (SIGNAL LINE 90)
L
H
HOLD EXPOSURE TIME MINIMUM VALUE
H
L
HOLD EXPOSURE TIME MINIMUMVALUE

FIG. 9

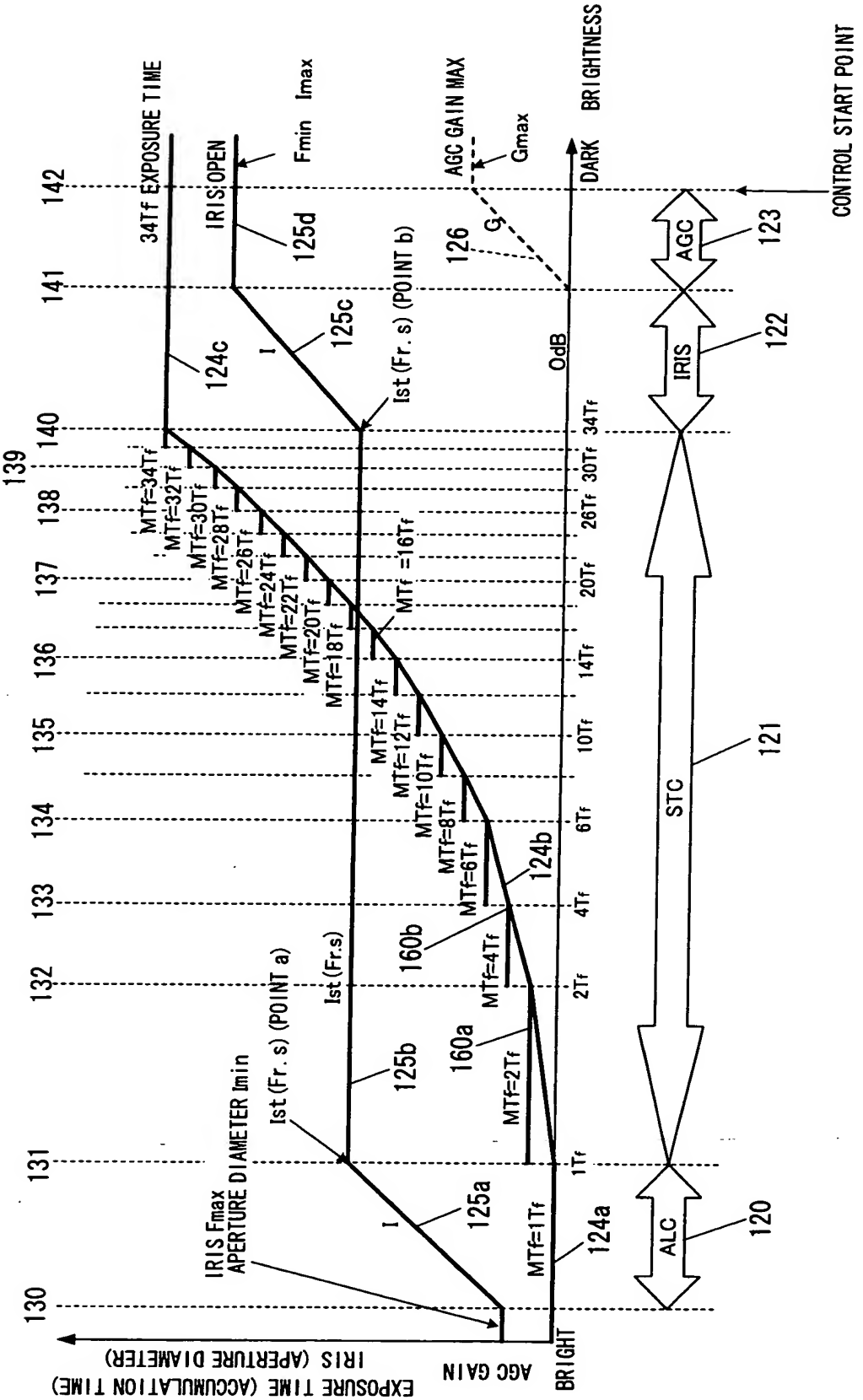
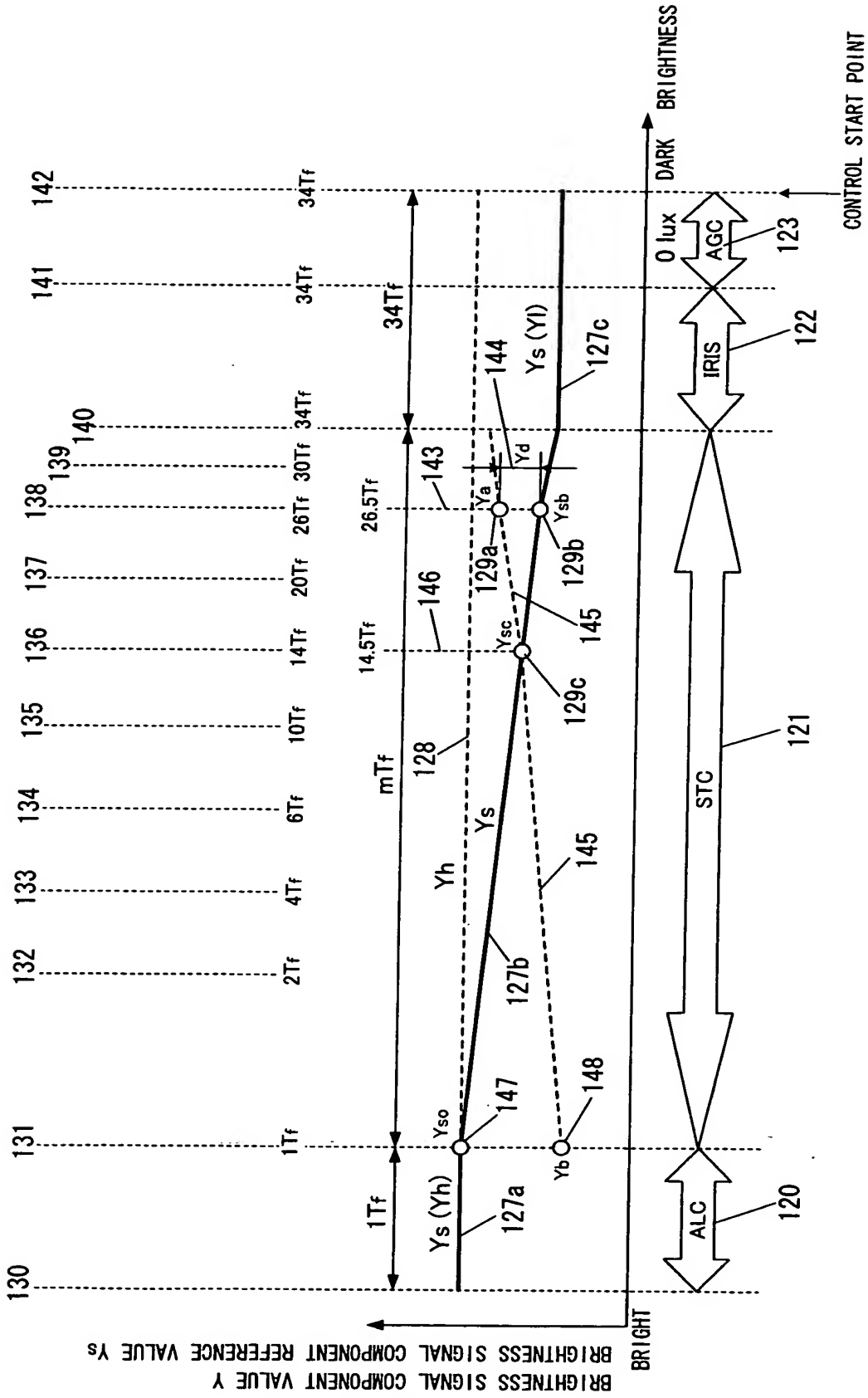

EXPOSURE TIME (ACCUMULATION TIME)
IRIS (APERTURE DIAMETER)
AGC GAIN
BRIGHT
DARK
BRIGHTNESS
CONTROL START POINT
34Tf EXPOSURE TIME
IRIS:OPEN
Fmin Imax
AGC GAIN MAX
Gmax
G
126
OdB
Ist (Fr. s) (POINT b)
Ist (Fr. s) (POINT a)
Ist (Fr.s)
IRIS Fmax
APERTURE DIAMETER Imin
MTf=34Tf
MTf=32Tf
MTf=30Tf
MTf=28Tf
MTf=26Tf
MTf=24Tf
MTf=22Tf
MTf=20Tf
MTf=18Tf
MTf =16Tf
MTf=14Tf
MTf=12Tf
MTf=10Tf
MTf=8Tf
MTf=6Tf
MTf=4Tf
MTf=2Tf
MTf=1Tf
34Tf
30Tf
26Tf
20Tf
14Tf
10Tf
6Tf
4Tf
2Tf
1Tf
124a
124b
124c
125a
125b
125c
125d
160a
160b
120
ALC
121
STC
122
IRIS
123
AGC
130
131
132
133
134
135
136
137
138
139
140
141
142

FIG. 10


BRIGHTNESS SIGNAL COMPONENT VALUE Y
BRIGHTNESS SIGNAL COMPONENT REFERENCE VALUE Ys
BRIGHT
DARK BRIGHTNESS
CONTROL START POINT
0 lux
AGC
IRIS
STC
ALC
120
121
122
123
127a
127b
127c
128
129a
129b
129c
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
1Tf
2Tf
4Tf
6Tf
10Tf
14Tf
14.5Tf
20Tf
26Tf
26.5Tf
30Tf
34Tf
mTf
Ys (Yh)
Yh
Yso
Ys
Ysc
Yd
Ya
Ysb
Yb
Ys (Yl)